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Charitable Giving, Self-Image and Personality*

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Abstract

We provide an experimental test of the role of self-signaling in decisions to donate to charity. Our data strongly supports the theoretical prediction of a non-monotonic, hill-shaped relationship between self-confidence, proxied by the Social Potency personality trait, and prosocial behavior motivated by image concerns. Making self-image concerns more salient can more than double donations by individuals with medium self-confidence.

JEL classification numbers: D64, D01, D03

Keywords: charity, donations, prosocial behavior, self-signaling, self-image, personality, leadership, social norms, social potency.

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1 Introduction

Ample empirical evidence shows that people, on average, tend to behave more "prosocially" after observing others behaving more prosocially. For example, in laboratory and field experiments alike, subjects tend to donate more to charity when they observe that others have been generous than when they observe that others have donated very little[1]. This is not consistent with donations being motivated exclusively by altruism towards the recipients of charitable giving. Several explanations for these observations have been proposed in the theoretical literature. Rotemberg (2011) argues that individuals like to feel that others share their beliefs, and feel altruistic towards those who do. This leads them to increase their donations when they observe higher giving to their favorite charitable cause. A similar outcome is predicted by Hermalin (1998), but for a different reason: in his model, leaders endowed with some private information may credibly signal this information, thereby influencing the behavior of followers. In the context of experiments with sequential decisions to contribute to charity, it has been argued that first-movers' decisions may signal private information about the quality of the charities concerned and the social value of their activities[2].

While these approaches focus on altruism, and on asymmetric information about the social value of charitable giving, a different strand in the theoretical literature has highlighted the role of *image concerns*[3]. Individuals may increase their contributions when they observe higher donations by others because they wish to be perceived favorably by others (social image concerns), and/or because they wish to perceive themselves in a positive light (self-image concerns). There is substantial evidence that people tend to behave more prosocially in public than in private settings, suggesting an important role for social image concerns[4]. Evidence for self-image concerns, on the other hand, is much more limited in economics[5].

[1]Several field experiments have shown that people tend to donate more when they are informed that others are also being generous. For example, Frey and Meier (2004) found that students were more likely to donate to a charitable University fund if they thought a higher proportion of students had donated in the past. Similar evidence has been found in field studies of voluntary contributions to a national park in Costa Rica (Alpizar, Carlsson, and Johansson-Stenman, 2008), public radio stations in the U.S. (Croson and Shang, 2008), maintenance of ski tracks in Sweden (Heldt, 2005) and an art gallery in New Zealand (Martin and Randal, 2008). The same tendency has also been directly observed in laboratory experiments using public goods games (Fischbacher, Gchter, and Fehr, 2001; Bardsley and Sausgruber, 2005) and dictator games (Krupka and Weber, 2009).

[2]In a similar vein, Fong (2007) finds that altruistic invidividuals place a large weight on the recipient's worthiness (a feature she calls "empathic responsiveness"). To the extent that donations by others may signal a recipient's worthiness, empathic responsiveness may lead to a positive influence of donations by others on an observer's donation.

[3]See, for example, Andreoni and Bernheim (2009), Bénabou and Tirole (2006, 2010); Bernheim (1994); Bodner and Prelec (2003); Ellingsen and Johannesson (2011).

[4]See, for example, Andreoni and Bernheim (2009); Andreoni and Petrie (2004); Ariely, Bracha, and Meier (2009); Dana, Cain, and Dawes (2006); Hoffman, McCabe, and Smith (1996); Rege and Telle (2004); Soetevent (2005)

[5]In psychology, there is a large empirical literature on how people acquire and preserve a positive self-image. For example, many studies document individuals' tendency to selectively focus attention, interpret and remember events so as to maintain confidence in their ability (see Dunning (2001) for a review and discussion)

In this paper, we focus on the role of *self-image*. We study charitable giving in an experimental setting where most individuals' choices are completely anonymous vis-à-vis other participants and the experimenters, thereby ruling out the possibility that they might be motivated by the desire to be perceived favorably by others. Specifically, one or two participants in each experimental session are randomly picked to be first-movers: their decisions are observed by the other subjects. Then the remaining participants make their donation decisions independently and privately. Our analysis focuses on these second-movers.

We examine how the second-movers' donation decisions vary when we make *image concerns more salient*. In our control condition, the first-movers' decisions are communicated anonymously to the second-movers through a message on each participant's computer screen: "The decision-maker has donated x". In our treatment condition, first-movers are required to stand up in front of the other participants and hold a card showing the amount they donated. We believe that seeing a peer stand up and show his donation decision in this way focuses an individual's attention on the image consequences of behavior.[6]

Our design holds the transmission of information about the first-movers' decisions constant across conditions: what we vary is the salience of image concerns, increasing it in the treatment condition. We can therefore explore the link between self-image concerns and "social influence": other people's choices might influence our behavior by making us think "If I behave in the same way, what does that say about the kind of person I am?".

We build on the theoretical analysis of self-signaling developed by Bénabou and Tirole (2011). In their model, individuals have imperfect self-knowledge, and receive private signals (e.g. through introspection) about their self (their "true identity"). However, these signals can be forgotten, or interpreted creatively to preserve a positive self-image. This may give a signaling value to the decision to undertake costly, identity-relevant *observable actions* - for example, giving money or time to charity, or other kinds of prosocial behavior. An important prediction of the model is that the propensity to engage in such "identity investments" will depend on an individual's *self-confidence*. Intuitively, someone who is very confident about his identity has little need for costly self-signaling, and will not make identity-affirming investments irrespective of whether he receives a "good" or "bad" private signal. For lower levels of initial self-confidence, the good type (who receives a good private signal) will have an incentive to invest to distinguish himself from the bad type and raise his *ex-post* self-confidence. For the bad type, on the other hand, the return from investing, thereby pooling with the good type, will increase with initial self-confidence.

Thus average identity investments will exhibit a non-monotonic, hill-shaped relationship with self-confidence. This yields the following prediction: *making image con-*

[6]Our approach builds on empirical evidence in psychology suggesting that the salience of image and moral concerns can have a substantial impact on decisions. For example, subjects who were asked to write down as many of the Ten Commandments as they could remember, during a memory test prior to taking a math test, cheated significantly less on the math test than subjects who were asked to write down the names of ten books they read in high school (Mazar, Amir, and Ariely, 2008). The presence of a mirror has also been found to reduce cheating (Beaman, Klentz, Diener, and Svanum, 1979; Batson, Thompson, Seuferling, Whitney, and Strongman, 1999; Diener and Wallbom, 1976).

cerns more salient should increase charitable donations by individuals with medium self-confidence, relative to individuals with high or low self-confidence.

To investigate this prediction, we asked subjects in our experiment to complete the Multidimensional Personality Questionnaire (MPQ). The questionnaire contains a large number of items, evaluating 11 primary trait dimensions. It has been used extensively, and shown to be a reliable method for eliciting *beliefs about the self*: MPQ traits correlate well with behavior, with judgements of the same individual made by other people, and with other prominent personality measures such as the Big Five (see section 3 below). One of the traits, Social Potency, captures the extent to which individuals perceive themselves as able to take decisions, persuade others, and enjoy leadership roles. This requires considerable self-confidence, and indeed Social Potency has been found to be correlated with self-confidence across a variety of domains[7]. We use the individual's score on the Social Potency scale as a proxy for prior self-confidence, since the questions are designed to elicit an individual's normal, stable beliefs and attitudes[8].

We conduct two tests. First, we allocate subjects to a high (top 33%), low (bottom 33%) and medium (the remainder) social potency group, based on their score on the social potency scale. For each group, we examine the impact of making image concerns more salient by comparing behavior in the visible stand-up leader treatment with behavior in the anonymous leader control condition. Our first main result is that making image concerns more salient in this way increases significantly the donations of the medium social potency group, while decreasing donations by the high and low social potency groups. We then investigate the determinants of donations in the treatment and in the control condition. In the treatment, where image concerns are more salient, we find a non-monotonic, hill-shaped relationship between donations and social potency. In the control, where image concerns are less salient, the pattern is reversed, with the highest donations for the high social potency group. These results support our hypothesis.

When comparing behavior in the control and the treatment conditions, we always use social potency scores obtained from answers to the MPQ taken at the end of the experiment; i.e. after the donation decisions. Taking the MPQ could, in itself, make image concerns more salient for subjects, since it focuses attention on the self and its characteristics. Thus it is important that the MPQ is taken after the donation decisions to have a clean comparison between the control and the treatment. This also suggests a second potential test for our hypothesis: in the anonymous leader control condition, we can have some subjects take the MPQ before the donation decisions, and compare their

[7]Larson and Borgen (2006) present evidence on the correlations between MPQ traits and different measures of self-confidence. Among all the traits, Social Potency has the highest correlations with Social Confidence and Enterprising Confidence, as well as with the overall mean level of confidence. Social confidence captures confidence in skills involving cooperation, generosity, and service to others. Enterprising confidence measures confidence in skills that entail risk-taking, competition, and influencing others. Burks, Carpenter, Goette, and Rustichini (2010) find that subjects with a high score on the Social Potency scale make more confident judgements about their performance in an IQ test, holding actual ability constant.

[8]Thus individuals are asked to express how strongly they agree or disagree with statements such as "When I work with others I like to take charge", and "When it is time to make decisions, others usually turn to me". MPQ traits have been found to exhibit considerable stability over time (see, e.g. Tellegen and Waller (2008)).

behavior with those who take the MPQ after the donation decisions, in the same condition. To the extent that taking the MPQ before increases the salience of image concerns, our hypothesis is again that this should increase the donations of subjects with medium social potency relative to those with high or low social potency. This is exactly what we find. Moreover, donations by subjects who take the MPQ before the donation decisions exhibit a hill-shaped relationship with social potency, while donations by subjects who take the MPQ after the donation decisions do not.

Our results are, to our knowledge, the first to suggest an important role for self-signaling in motivating prosocial behavior. The evidence in Dana, Weber, and Kuang (2007), Larson and Capra (2009) and Van der Weele (2012), strongly suggests that self-image concerns matter, since individuals are more likely to choose the action that maximizes their own payoff when they have the option of remaining ignorant about the consequences of their action for others[9]. Grossman (2010) provides a clean test of self-signaling in a dictator game where the dictators' identities are not observed by the experimenters or the recipients. The dictator chooses between a "fair" and a (more profitable) "selfish" allocation, knowing that with some probability his choice will not affect the outcome, which will be determined instead by a computer. By varying exogenously this probability, the experimenter can reduce the cost of self-signaling for the subject, implying that giving should increase as the probability decreases. In this setting, Grossman finds little evidence of self-signaling. This is consistent with our findings for the anonymous leader control condition: there is little evidence of self-signaling when image concerns are not made salient. One of the main contributions of our paper is to show that self-signaling does become important when image concerns are made salient, whether this is achieved by seeing a peer stand up and hold a sign showing his decision, or by having to complete a detailed questionnaire about oneself.

The remainder of the paper is organized as follows. Section 2 briefly reviews the analysis by Bénabou and Tirole (2011) in order to obtain the main prediction to be examined in our experiment. Section 3 describes our experimental design and procedures, as well as providing information about the MPQ. Section 4 presents our results on charitable giving and self-confidence. Section 5 contains some additional results on the relationship between donations and personality traits. Section 6 concludes.

2 Self-signaling and self-confidence

We outline below the key elements of the identity theory developed by Bénabou and Tirole (2011) and hence the prediction to be tested in our experiment.

2.1 The model

In the baseline version of the model, an individual has imperfect self-knowledge to begin with: for simplicity, he may be a "good" type, v_H, or a "bad" type, v_L, and he has a prior

[9]While Dana, Weber, and Kuang (2007) and Van der Weele (2012) do not have anonymity of participants' decisions relative to the experimenters, making it hard to disentangle self-image from social image concerns, Larson and Capra (2009) does have complete anonymity

belief ρ which represents the probability of being the good type. The individual's type v reflects his "identity". The prior belief ρ captures his initial self-confidence[10].

The individual then receives a private signal concerning his type; for simplicity, this signal is assumed to be fully informative (v). However, the signal is "soft" information - for example, "an instinctive feeling of empathy, a temptation to cheat or a conscious self-assessment". The individual has a momentary glimpse into his true nature, but his subsequent recall of this insight will be very imperfect and self-serving[11]. This is modeled by assuming that in the next period, with a given probability, denoted by $1-\lambda$, the individual will no longer recall (reliably) the signal, and will update his belief on his type using only "hard" information.

Hard information is provided by an observable action (or its absence): just after receiving his private signal, the individual has the option to undertake an identity-affirming action, whose cost c_0 is (weakly) lower for the good type (e.g. buying "green" products, donating to charity). Denote by $a_0 \in \{1, 0\}$ this investment decision. In the next period, with probability $1-\lambda$, the individual no longer recalls reliably his private signal; he therefore updates his belief on his type based on the observation of a_0. This yields the following updated beliefs $\rho^*(a_0)$:

$$\rho^*(1) = \frac{\rho x_H}{\rho x_H + (1-\rho)x_L}; \qquad \rho^*(0) = \frac{\rho(1-x_H)}{\rho(1-x_H) + (1-\rho)(1-x_L)} \tag{1}$$

where x_H and x_L are the investment probabilities for the good type and the bad type, respectively. We will refer to the individual choosing the action a_0 as the current self, and the same individual updating his belief the next period as the future self.

Bénabou and Tirole develop different versions of the demand side of the model, based on different possible reasons for people to wish to have high self-confidence *ex post* (i.e. high posterior beliefs ρ^*)[12]. For our purposes, what matters is their characterization of the equilibrium of the signaling game between the current self and the future self, which does not depend on the particular reason for desiring high self-confidence *ex post*. The equilibrium is described in their Proposition 1:

Proposition 1 (Bénabou and Tirole (2011)) *There exists a unique (monotonic, undominated) equilibrium, characterized by thresholds ρ_l and ρ_h with $0 < \rho_l \leqslant \rho_h \leqslant 1$ and investment probabilities $x_H(\rho)$ and $x_L(\rho)$ such that:*

(1) $x_H(\rho) = 1$ for $\rho < \rho_h$ and $x_H(\rho) = 0$ for $\rho > \rho_h$;

(2) $x_L(\rho)$ is non-decreasing on $[0, \rho_l]$, equal to 1 on $[\rho_l, \rho_h)$ when $\rho_l < \rho_h$ and equal to 0 on $[\rho_h, 1]$.

The intuition for this result may be summarized as follows. When initial self-confidence is sufficiently high ($\rho > \rho_h$), neither type needs to invest in identity, since in the absence of investments *ex-post* confidence will still be high ($\rho^* = \rho$), and could not have been increased much. When initial self-confidence falls below the critical threshold ρ_h, it becomes

[10]The model takes priors as given exogenously. Our empirical strategy relies on the fact that self-confidence is closely related to personality, and that the social potency trait captures a substantial part of the individual heterogeneity in self-confidence.

[11]See Bénabou and Tirole (2011) for a discussion of the evidence in support of this assumption.

[12]The reasons they consider are: the hedonic benefits of high self-esteem; anticipatory utility; the instrumental benefits in dealing with self-control problems.

worthwhile for the good type to invest to try to separate from the bad type, and thereby raise his *ex-post* confidence ρ^*. What happens in equilibrium depends on the behavior of the bad type. If his cost c_0^L is sufficiently high, he will never invest (separation: $x_H(\rho) = 1$, $x_L(\rho) = 0$). For lower values of c_0^L, he will invest with strictly positive probability. The probability is increasing in ρ, since the net gain from pooling with the good type increases with ρ (from (1)).

Thus as long as $\rho_h < 1$, average investment in identity will decline for sufficiently high values of initial self-confidence. Moreover, unless $x_L(\rho)$ is equal to 1 on $[0, \rho_l]$, average investment in identity will exhibit a non-monotonic, hill-shaped relationship with initial self-confidence, ρ. This yields a distinctive prediction that can be investigated with our experiment.

3 Experimental Design and Procedures

The study was conducted with students at the University of Cambridge. Participants were unaware of the nature of the study before entering the lab[13]. Subjects were only identified through personal IDs which were assigned randomly as they entered the lab. Once in the lab, they were informed that the experiment studied decisions to donate to charity. They were assured that none of the experimenters would be able to link their identities with their decisions and that payments at the end of the experiment would be made so as to preserve confidentiality[14]. They were presented with a choice of three charities and a short summary of their aims and operations. The charities used were *The British Red Cross*, *Amnesty International* and *Save the Children*. We chose three international well known charities to maximize the likelihood that subjects would be familiar with them.

The experiment was divided into three parts: *leader announcement*, *follower donations* and *personality questionnaire*. We used a between-subjects 2×2 design, with the two factors being *leader visibility* and *number of leaders*. Some sessions had two leaders instead of one. This allowed us to check whether the degree of social influence was affected when the number of leaders increased from one to two. It also allowed us to evaluate the effect of conflicting announcements sent by the leaders. Each corresponding procedure was explained before subjects made their decisions.

Leader announcement: subjects were informed that one or two subjects in the room would be randomly selected as *leaders* (to avoid priming, we referred to these subjects as "decision-makers"). The leaders would be endowed with £10 and would have to decide to either *donate £4 to a charity and keep £6*, or *donate £0 and keep £10*. The selected leaders would simply be prompted to enter their decision privately into their computer, while everyone else would be prompted to make an unrelated decision. This was done to ensure the anonymity of the leaders. Once all subjects had completed their task, the choices of the leaders would be announced via subjects' PC screens. The initial instructions for the *visible leaders* sessions contained an additional part, specifying that the leaders would have to stand and hold up a sign with the amount donated written on

[13]They were only told that the experiment would study decision-making.

[14]This was achieved by preparing sealed envelopes containing the appropriate cash payments, with the ID code written on the envelope.

it for all participants to see. We explained that the experimenters would leave the lab while this took place: specifically, once the leaders' decisions appeared (anonymously) on the PC screens, the experimenters would walk out of the room and an assistant, otherwise unrelated to the experiment, would walk in bringing cards corresponding to the two possible decisions. Each leader would then stand, choose a card and hold it up so that the other session participants could read the amount he or she was donating to charity. They would then return the card to the assistant and go back to sit in front of their PC screen. At this point the assistant would go out, the experimenters would go back to the lab, and the experiment would continue.

Follower donations: in the next part of the experiment, followers received a £10 endowment which they could freely and privately allocate between themselves and a charity of their choice (to the nearest pound). Subjects entered their choices individually and confidentially into their PCs. Note that subjects did not know about this stage in the first part of the experiment.[15]

Personality questionnaire: subjects were asked to complete a brief (155-item) form of the Multidimensional Personality Questionnaire (Patrick, Curtin, and Tellegen, 2002). The MPQ is a standard personality profile test (Patrick, Curtin, and Tellegen, 2002; Tellegen, 1988). The measured traits have been found to be consistent over time with correlations ranging from 0.82 to 0.92 (Tellegen and Waller, 2008); moreover, there is evidence of substantial heritability (Patrick, Curtin, and Tellegen, 2002). Self-reported judgements are significantly correlated with evaluations made by others of the same individual (see, for example, Harkness, Tellegen, and Waller (1995)). MPQ scales correlate well with behavioral indices (e.g. McGue, Slutske, and Iacono (1999)), as well as with other prominent personality scales, such as the Big Five (Church and Burke, 1994; Tellegen and Waller, 2008).

The MPQ consists of a series of multiple choice questions concerning 11 primary trait scales. The primary traits measured by the MPQ (and by its brief form) are: Social Potency, Wellbeing, Achievement, Social Closeness, Stress Reaction, Alienation, Aggression, Control, Harm Avoidance, Traditionalism and Absorption. Questions were ordered randomly and subjects had to answer all 155 questions, which were presented one at a time on their PC screens.

The Social Potency scale is particularly relevant to our work. A high score on this scale indicates that the subject considers himself to be persuasive, that he likes to be a leader and that he feels others value his judgements. These characteristics tend to be highly correlated with self-confidence. Studies that have examined the relationship between MPQ traits and self-confidence confirm the expected correlation with Social Potency (Burks, Carpenter, Goette, and Rustichini, 2010; Larson and Borgen, 2006).

Some of the other traits measured by the MPQ could also be relevant to decisions to donate to charity. In what follows, we shall explore this possibility. For instance, subjects with a high score in Social Closeness describe themselves as sociable, warm and affectionate, valuing close relationships, and welcoming support from others (all features which could in principle enhance altruistic or "warm glow" motives for donating). Simi-

[15]Participants could choose one of the three charities used in the first part of the experiment. Note that the leader(s)' chosen charity, if any, was never revealed.

Table 1: Average donations by leader announcement

Announcement	£0£0	£0	£0£4	£4	£4£4
Avg. Donation	3.667	1.944	2.333	2.91	4.18
Std. error	(1.142)	(1.944)	(0.416)	(0.333)	(1.060)

larly, subjects with high scores in Traditionalism tend to advocate high moral standards, condemn selfishness, endorse religion and strict child rearing, oppose permissiveness and value propriety.

4 Results: Donations and Self-confidence

Our main hypothesis, discussed in detail in section 2, is that donations motivated by image concerns will exhibit a *non-monotonic, hill-shaped relationship* with self-confidence, proxied by social potency. Thus we should observe that *making image concerns more salient increases charitable giving by individuals with medium social potency*, relative to those with high or low social potency. We conduct two tests of this prediction. The first test is based on comparing behavior in the treatment (stand-up, visible leader) condition, where image concerns are more salient, with behavior in the control (anonymous leader) condition, where image concerns are less salient.

4.1 First test: comparing control and treatment

For this test, we focus on subjects who completed the MPQ just after their donation decisions. As discussed in the Introduction, this yields a clean comparison between the control and the treatment condition, ensuring that answering the MPQ questions did not in itself make image concerns salient for all participants before their donation decisions. A total of 106 subjects completed the MPQ immediately after their donation decision. Tables 1 and 2 present a first summary of the data on these subjects.

Table 1 displays average donations following each leader announcement. Overall, average donations by followers tend to increase with donations by leaders, as in previous studies. An interesting exception occurs when two leaders both donate zero. Follower donations in this case are higher, on average, than with a single leader who donates £4, suggesting that sometimes followers react against the example set by leaders.

Table 2 displays average donations as a function of the Social Potency score (SP). We divide subjects into three groups, corresponding to SP in the bottom third, middle, and top third of our sample. In the stand-up, visible leader condition (referred to simply as "public" for ease of exposition), donations by followers with medium SP are significantly higher than donations by followers with high SP ($p = 0.014$) and low SP ($p = 0.042$).[16] Also, followers with medium SP donate more than double, on average, in the treatment than in the control ($p = 0.007$). The pattern of behavior in the anonymous leader condition is quite different: followers with the highest SP donate significantly more

[16]We use Mann-Whitney U-tests for pairwise comparisons unless otherwise stated

Table 2: Average donations by Social Potency. Low, Medium and High SP correspond to 1st, 2nd and 3rd tertile in our sample, respectively

	Anonymous leader			Public leader		
Social Potency	Low	Medium	High	Low	Medium	High
Avg. Donation	2.857	1.643	4.333	2.714	3.913	2.080
Std. error	(0.459)	(0.440)	(0.943)	(0.546)	(0.566)	(0.424)

than followers with medium SP ($p = 0.017$). These first findings are consistent with our hypothesis.

4.1.1 Charitable giving and self-confidence

We now examine the relationship between charitable giving and self-confidence in more detail. We first test the hypothesis that *making image concerns more salient increases charitable giving by individuals with medium social potency*, relative to those with high or low social potency.

We estimate equations for the amount donated to charity separately for followers with low, medium and high SP. The regressors used in this model are a dummy variable for each type of leader announcement, and a treatment dummy called "public". Since donations are bound between 0 and 10, we use a Tobit model. Table 3 presents the results.

The estimations show that making image concerns more salient, by requiring the leader to stand up and hold a card with his donation written on it, has a strong positive impact on the donations of medium SP subjects, and a milder negative effect on high SP subjects[17]. The estimated effect on low SP participants, also negative, is not statistically significant. Thus *making image concerns more salient significantly increases donations by medium SP subjects relative to high and low SP subjects.*

We then estimate donation equations for all followers in the control condition and for all followers in the treatment condition (first and second columns of Table 4). Our hypothesis is that donations motivated by image concerns should exhibit a non-monotonic, hill-shaped relationship with SP. In principle, donations could vary with SP for reasons unrelated to image concerns, which could obscure the presence of the hill-shaped relationship due to image concerns. Looking at the results for the control condition, where image concerns are less salient, we find that donations are significantly lower for subjects with medium SP - implying a U-shaped relationship between donations and SP. However when we focus on the treatment condition, where image concerns are more salient, a hill-shaped relationship clearly emerges, with donations by medium SP subjects substantially higher than for other subjects. We also estimate a donation equation pooling the data for the control and the treatment (last column). Here the regressors include a "public" dummy variable for the treatment, and an interaction term "$Public \times MediumSP$". The interaction term has a large and significant positive estimated coefficient. Moreover, the

[17]The self-signaling model described in Section 2 would predict higher donations by medium SP subjects, and no difference for high SP subjects. The observed decrease in donations by high SP subjects suggests, interestingly, that for this group making image concerns more salient may crowd out other motivations for giving.

Table 3: Tobit Regressions of charitable donation for each SP group. Regressors: leader visibility and leader announcements.

	Low SP	Medium SP	High SP
	Coefficient	Coefficient	Coefficient
	(std. error)	(std. error)	(std. error)
Public	-1.159	3.375***	-2.710**
	(1.419)	(1.153)	(1.277)
£4£4	3.571*	1.925	2.636
	(1.864)	(2.002)	(2.092)
£4	1.329	-1.401	2.582
	(1.227)	(1.525)	(1.671)
£0£4	0.745	0.089	-1.162
	(1.759)	(1.764)	(2.584)
£0£0	6.773***	-0.489	0.043
	(1.863)	(2.293)	(2.144)

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

qualitative results detailed here remain the same when we include other MPQ traits in the regressions (see Table 7).

These findings all support our hypothesis. In a context where image concerns are made salient, individuals with medium self-confidence donate more than individuals with very high or very low self-confidence. In the control, where image was not made salient, this hill-shaped relationship with self-confidence is not present. The regression with pooled control and treatment data confirms the result that only subjects with medium SP increase donations in the treatment condition. This is reflected by the large and significant coefficient on $Public \times MediumSP$ and the contrasting negative coefficient on the "public" dummy.

4.2 Second test: comparing subjects who took the MPQ before and after their donation decisions in the control

As we argued in the Introduction, having to answer the many questions about the self contained in the MPQ could, in itself, make image concerns salient. It was therefore important to administer the MPQ *after* the donation decisions in order to compare behavior in the control and the treatment. The results, reported above, supported our hypothesis. We can also conduct a second test of the hypothesis by focusing on the control condition, and comparing the behavior of subjects who completed the MPQ *before* their donation decisions with the behavior of those who completed it *after* their donation decisions. The control condition does not, in itself, make image concerns salient. It seems very likely, on the other hand, that answering the 155 questions in the MPQ does make image concerns salient. We can therefore examine whether taking the MPQ before the donation decision increases charitable giving by participants with medium self-confidence relative to those with high or low self-confidence, relative to taking the MPQ after the donation decision.

A total of 49 subjects in our experiment completed the MPQ a week before the exper-

Table 4: Tobit Regressions for pooled data and for control and treatment separately.

	Control only	Treatment only	Pooled
	Coefficient	Coefficient	Coefficient
	(std. error)	(std. error)	(std. error)
Public	-	-	-1.989**
			(0.955)
Medium SP	-3.082***	2.891***	-2.248*
	(1.098)	(0.975)	(1.220)
$Public \times MediumSP$	-	-	4.665***
			(1.391)
Low SP	-1.469	1.321	0.682
	(1.207)	(0.933)	(0.763)
£4£4	-0.090	3.606**	2.826**
	(1.543)	(1.428)	(1.227)
£4	0.006	1.158	1.086
	(0.989)	(0.981)	(0.904)
£0£4	-	-0.287	0.453
		(1.616)	(1.177)
£0£0	-	2.384*	2.244*
		(1.366)	(1.277)

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

iment[18]. They were allocated randomly to control and treatment sessions in the experiment, giving 28 participants in the control condition and 21 in the treatment. Here our focus is on the control condition: we therefore examine data for all the subjects in the control sessions (those who took the MPQ before and those who took the MPQ after their donation decisions). To isolate the impact of making image concerns more salient, we estimate Tobit regressions for the amount donated, including among the regressors a dummy variable "*Exante-MPQ*" taking value one if the subject completed the MPQ before the donation decision, and value zero if he completed the MPQ after the donation decision[19]. We do this separately for subjects with high, medium and low self-confidence. The results are reported in Table 5. We find that subjects with medium SP indeed donated significantly *more* when the MPQ was administered before their donation decision, while other subjects donated *less*. Our second test therefore confirms the results of our first test: in both cases, *making image concerns more salient increases donations by participants with medium self-confidence relative to those with high or low self-confidence.*

We also pool the data for the different SP groups and estimate separate equations for the subjects who took the MPQ before and after their donation decisions. These are presented in Table 6 (first two columns). We find a clear hill-shaped relationship between

[18]These subjects were asked to bring the ID numbers that they had used for completing the MPQ test, and were told that they would be able to finish the experiment earlier, since they would not need to complete the MPQ again. These procedures made the link explicit between MPQ responses and our experiment, which is likely to have made image concerns salient for these subjects.

[19]It could be argued that subjects who took the MPQ before the donation decision *and* participated in the visible leader treatment can also be included in the analysis, together with those who took the MPQ before and participated in the control condition, since for both groups image concerns were made salient. We therefore repeated the analysis including these subjects, and obtained qualitatively the same results.

Table 5: Tobit Regression: donations in the control treatment for each SP group

	Low SP	Medium SP	High SP
	Coefficient	Coefficient	Coefficient
	(std. error)	(std. error)	(std. error)
Exante-MPQ	-0.195	2.242**	-3.718**
	(0.887)	(1.062)	(1.366)
£4£4	-11.422	1.732	1.782
	(.)	(1.417)	(2.419)
£4	-0.874	-0.474	0.787
	(0.853)	(1.220)	(1.468)

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

Table 6: Tobit Regression: donations in the control condition with MPQ taken before or after donation decision

	Ex-ante MPQ	Ex-post MPQ	Pooled
	Coefficient	Coefficient	Coefficient
	(std. error)	(std. error)	(std. error)
Exante-MPQ			-2.929***
			(0.922)
Medium SP	2.802**	-3.082***	-2.730**
	(1.246)	(1.098)	(1.096)
$Exante \times MediumSP$			5.223***
			(1.464)
Low SP	0.849	-1.469	-0.319
	(1.513)	(1.207)	(0.966)
£4£4	1.817	-0.097	1.044
	(1.678)	(1.584)	(1.167)
£4£0	0.275	-0.006	0.048
	(1.175)	(0.989)	(0.774)

$^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$

the amount donated and self-confidence (SP) for the sample of participants who took the MPQ before the donation decisions. This relationship is absent for the sample of subjects who took the MPQ after their donation decisions. We then pool the data and estimate a single equation for all participants in the control condition, including a dummy for "*Exante-MPQ*", a dummy for "*Medium SP*", and an interaction term "$Exante \times MediumSP$". The results, summarized in the last column of Table 6, show that it is indeed the participants with medium self-confidence who donate significantly more when the MPQ is taken *ex ante*. These findings further support our hypothesis.

5 Results: Charitable Giving and Personality

This section summarizes our main findings on the relationship between donation decisions and personality traits. Table 7 shows Tobit regression results with the full set of traits as regressors using pooled data on followers taking the MPQ after their donation. Note that this regression is similar to the pooled regression in Table 4, with the addition of

the remaining personality traits scores. As before, we continue to find a positive and significant effect of the interaction $Public \times MediumSP$.

We find three other significant correlations with personality traits: *Stress reaction, Control* and *Harm avoidance*. In contrast, we find no significant correlations with other traits that one might associate to altruistic or "warm glow" motives for donating, such as *Social closeness* or *Traditionalism*.

Stress reaction and *Harm avoidance* both relate to an individual's aversion to stressful or dangerous situations. Their combined effect size and significance is large. This result suggests the presence of a powerful emotive mechanism underlying prosocial behavior, in addition to the cognitive mechanism linked to image concerns that was our main focus in the previous section. In a setting where choosing to donate nothing to charity would have been perceived by many as violating the prevailing social norm, individuals with a strong aversion to stress and danger donate more, even though they know their decisions will remain completely anonymous. A possible interpretation of this finding is that individuals have internalized the social norm to some extent, and norm violation causes stress and anxiety (as in Akerlof and Kranton (2000)): those who are more sensitive to stress and anxiety are therefore less likely to violate the norm. In this sense, we view our results as complementary to those of Ellingsen and Johannesson (2008). In their study, proposers in a dictator game were significantly more generous when they anticipated verbal feedback from responders. The authors interpreted their results as likely caused by humans' natural sensitivity to shame or blame, and the desire to avoid them. Our results suggest that the motivation to avoid shame or blame can be internalized and apply even in the absence of an actual audience[20].

A trait that appears instead to reduce donations significantly is *Control*. Individuals with high scores in this trait view themselves as level-headed, rational and tending to plan activities in detail. Low scores in this trait reflect impulsivity. In line with the interpretation for the other traits, we could conjecture that such individuals might find it easier to justify to themselves, with rational arguments, a departure from social norms.

6 Conclusions

We have manipulated experimentally the salience of image concerns in two different ways, and studied the impact on charitable donations in a setting with double-blind anonymity. Both manipulations yield results consistent with the theoretical prediction of a non-monotonic, hill-shaped relationship between prosocial behavior motivated by self-image concerns and self-confidence.

These findings provide evidence in support of self-signaling models. Moreover, the impact of self-image concerns is both statistically significant and economically important: average donations by individuals with medium self-confidence are more than doubled when their attention is focused on image concerns.

Additionally, we find a strong positive correlation between donations and the MPQ

[20]This is consistent with the notion of "private shame" in psychology, since this essentially internalizes others' critical gaze on the self.

Table 7: Tobit Regressions for pooled data with MPQ taken after donations

	Coefficient (std. error)		Coefficient) (std. error)
Public	-1.537*	Social closeness	0.922
	(0.918)		(0.693)
Medium SP	-1.198	Stress reaction	2.134***
	(1.304)		(0.770)
$Public \times MediumSP$	3.530**	Traditionalism	0.561
	(1.359)		(0.703)
Low SP	0.748	Alienation	-0.959
	(0.911)		(0.859)
£4£4	2.884**	Aggression	-0.277
	(1.177)		(0.755)
£4	1.090	Wellbeing	0.321
	(0.937)		(0.929)
£0£4	0.516	Abstraction	-0.300
	(1.155)		(0.761)
£0£0	2.457*	Achievement	0.108
	(1.279)		(0.690)
		Control	-1.832**
			(0.800)
		Harm avoidance	2.086***
			(0.682)

*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

traits *stress reaction* and *harm avoidance*. This offers new evidence that, even in a context of anonymity, individuals may be partly motivated to behave prosocially in order to protect themselves from the stress and anxiety associated with violating social norms.

From a methodological point of view, our results illustrate the profitable use of personality psychology to test and refine economic hypotheses regarding prosocial behavior.

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7 Appendix

7.1 Instructions

[All instructions are displayed on subjects screens]

General rules

During this experiment, all your answers and decisions will be recorded in a completely anonymous manner, and the resulting data will be identified only by the **ID number** you picked randomly before starting the experiment.

Please type in your ID number, exactly as it is written on the ticket you picked before the start of the experiment. If you have a question, please raise your hand.

If there are no questions, we can move on to the specific instructions.

[NEXT SCREEN]

Specific instructions (stage 1)

This experiment studies decision-making. There are no right or wrong decisions: you should simply decide according to your preferences. There are two parts to the experiment. In both parts, *participants who are given an endowment have to decide how much to keep for themselves and how much to give to charity.* We will provide specific instructions for each part before the start.

In the first part, one participant will be picked randomly to make a decision: we refer to him or her as "the decision-maker".

The decision-maker will receive an endowment of **£10.** He or she will have to decide whether to **keep all the endowment** or to **donate £4 to a charity.** The charity can be chosen out of three possibilities: the Red Cross, Save the Children, and Amnesty International.

We will now explain the procedure in detail.

[NEXT SCREEN]

The following information will appear on participants' screens.

All participants, including the decision-maker, will see some information describing the three charities. Then the decision-maker will find out that he or she has been randomly picked to make the decision, while the other participants find out that they have not.

On the following screen, the decision-maker will be asked to specify his or her allocation choice. The other participants will be asked a completely unrelated question (so that the decision-maker cannot be readily identified as the only participant answering a question).

Finally, **all participants will see on their screen whether the decision-maker chose to give to charity or not.**

[CONTROL CONDITION:] Note that the identity of the decision-maker will never become known to other participants, nor to the experimenters who will identify participants only by their ID codes. Moreover, payments at the end of the experiment will be

made so as to ensure that the experimenters cannot deduce any participant's decisions from his or her earnings.

[TREATMENT ONLY:] At this point, the **decision-maker** will be asked to **stand up and hold up** either a **card** saying *"Zero to charity"* or a card saying *"Four pounds to charity"*, corresponding to his or her choice. We will walk out of the laboratory while this happens, and another person who is not one of the experimenters and will have nothing further to do with the experiment will come in briefly to bring the two cards, leaving as soon as the decision-maker holds up the relevant card.

The decision-maker will then sit down again, and the experiment will continue.

This is to ensure that the identity of the decision-maker will never become known to the experimenters. Note that payments at the end of the experiment will be made so as to ensure that the experimenters cannot deduce any participant's decisions from his or her earnings.

[NEXT SCREEN]

Here is some information about the three charities:

Amnesty International

We are a campaigning organization; it's what we do. Our purpose is to protect people wherever justice, fairness, freedom and truth are denied. We work on lots of issues. Right now our priority campaigns are Stop Violence Against Women and Terrorism, Security and Human Rights.

British Red Cross (Haiti Earthquake Appeal)

Drawing on resources around the world the Red Cross is carrying out a huge emergency response operation. Pre-positioned relief goods were released immediately within Haiti and from other warehouses in the region. These consist of kitchen kits, shelter kits, personal hygiene kits, blankets and containers for storing drinking water.

As well as distributing vital supplies the Red Cross is providing medical aid and water for survivors.

Save the Children

We're working flat out to ensure children get proper healthcare, food, education and protection. We're saving lives in emergencies, campaigning for children's rights, and improving their futures through long-term development work.

[NEXT SCREEN: DECISION MAKER(S) ONLY]

Your ID code was randomly selected to be the decision-maker's.

We are giving you an endowment of **£10.** Please specify your decision:

[NEXT SCREEN: DECISION MAKER(S) ONLY]

I would like my donation (if any) to go to:

[NEXT SCREEN: REST OF THE GROUP]

Your ID code was not selected to be the decision-maker's.

Please answer the following question:
Which of these charities are you most familiar with?

[NEXT SCREEN]

"The decision maker has donated nothing"
[OR]
"The decision maker has donated £4"

[NEXT SCREEN: TREATMENT ONLY]

Please now wait for the assistant to come in and the decision-maker to stand up and show the card corresponding to his or her decision.
Do not click on "Next" until the decision-maker sits down again.

[NEXT SCREEN: TREATMENT ONLY]

Please wait for the experimenter to come back into the room and then press "Continue".

[NEXT SCREEN]

Specific instructions (stage 2)
In this part of the experiment, **all participants** are given an endowment of **£10**.
They all **independently and privately** choose how much to keep for themselves and how much to donate to a charity. Your decision will not be shown to other participants in any way (e.g. it will not be shown on their screens, and you will not be asked to stand up and hold a card with the decision written on it), and it will be the last decision you need to make in the experiment. Any integer amount can be donated. The recipient charity can be chosen from the same list of three used in the previous part:
Save the Children, Red Cross and Amnesty International.

[NEXT SCREEN]

We are giving you an endowment of **£10**. Please specify your decision:
I donate the following amount to charity:
[Integer amount from £0 to £10]

[NEXT SCREEN]

I would like my donation (if any) to go to:
[Amnesty, Red Cross or Save the Children]

[NEXT SCREEN]

We now ask you to what extent you agree or disagree with each of the following statements. Remeber that your anonymity is guaranteed since you will only be identified by your experiment ID number.

Please provide honest answers.

[155-item MPQ]

In this part of the experiment, we would like to collect some basic information about you.

In the following section you will be asked your age and whether you are an undergraduate student, a postgraduate student, or neither. This information is only collected to find out the composition of our volunteer population. Remember that your anonymity is guaranteed, since you can only be identified by the experiment ID you were given at the start. When you are ready, please press "Next" to proceed.

[NEXT SCREEN]

The experiment has now ended. Thank you for your participation. We just ask you to answer three last questions. Please press "Next".

[Gender, mother tongue, subject]